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## NEW APPARATUS, REVIEWS, ETC.<sup>1</sup>

### A PHOTOMICROGRAPHIC OUTFIT

BY JAMES H. STEBBINS, JR.

WITH PLATE XV

After experimenting for a long while on kerosene, Welsbach burners, and acetylene as a source of illumination, I have finally settled down to the arc light as the best all-round light for photomicrographic work.

My outfit consists of the following parts: a Fox automatic arc light; a Zeiss optical bench supplied with a set of three Köhler condensing lenses, specially designed for the use of the arc light, and also manufactured by Zeiss; a water cell for cooling the rays; an iris diaphragm for regulating the size of the cone of light; a unicum shutter; and two cells for holding colored solutions,—in other words, two ray filters. The microscope used with this outfit is a Zeiss photomicrographic microscope, with a large short tube, designed expressly for this purpose, and permitting the use of the Zeiss planars for very low power work. The coarse adjustment of the microscope is connected by means of a belt passing over one of milled heads of the coarse adjustment to a pulley connected with a long brass rod on the underside of the microscope and camera stand and terminating at its farther end with a large milled head, by which means the microscope may be coarsely focused from the farther end of the camera. The fine adjustment is operated in a similar manner from the farther end of the camera. The camera in use in my outfit is one that was especially made for me by Folmer and Schwing. It is an 8 x 10 inch camera, with a bellows drawing out to about five feet, and is so arranged that the bellows can be extended from either end.

The camera-bed is extended out far enough in front of the camera to hold the platform upon which the microscope rests, and I have found that by this means vibration is reduced to a minimum.

The camera, microscope and optical bench all rest on a single, light, long, wooden table, and although I have worked in localities

<sup>1</sup> Cf. Minutes of the meeting, p. 159, and announcement, p. 159.

where there was much vibration from passing trucks, trolleys, etc., yet owing to the peculiar arrangement of my outfit, I have had but very little trouble in this particular direction, even with very high-power work.

It will hardly be necessary for me to say anything in regard to the plates and developer I use, as each person has his pet plates and formulas, but in the work which I have to do, I have found that the Cramer isochromatic slow and the Cramer trichromatic plates, using glycin as a developer, have given the best results.

I trust that this rather erratic description of my photomicrographic outfit may be comprehensible.

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## THE PIETZSCH MICROTOME

BY EDWARD P. DOLBY

In undertaking to improve the rotary microtome was realized the necessity of making it as simple in construction as efficient, and as practical as possible, and we feel satisfied that there have been added many appreciable advantages to the excellent invention of Professor Minot.

First of all it was endeavored to construct a knife holder which would serve to operate both paraffin and colloidin preparations, thus doing away with the expense and inconvenience of an extra holder, while moreover affording the advantage to the operator of being able to read the angles of inclination, so that the most favorable angles for different kinds of work may be noted, and taken when doing again the same work.

Another important advantage of this microtome is that the active part of the knife may be restricted in order to obtain the greatest rigidity and to use the entire length of the edge before resharpening. It will be well to notice that the knife is clamped against a three-point plane, logically the only secure clamping device for a honed knife, which only by accident is a perfectly straight plane. Even a new knife is seldom of a perfect, straight plane, an old one never.

The object carrier is exceedingly rigid and simple, though it permits the adjustment of the object in every plane as well as the most complicated heretofore constructed, and has besides the advantage of being clamped by only one screw instead of two or three, and